associated with no such anatomical peculiarities —*e.g. Taxodium distichum*—which opposes great resistance to rapid depletion of water. The result of our ignorance of the basic principles in play is that the modern technique of artificial seasoning is partly empirical.

Timber-drying kilns in which the necessary regulation of the temperature, relative humidity, and movements of the air can be secured belong to two main types.

One type is the tunnel-like "progressive" kiln, in which the timber enters at the moist end and leaves at the drier exit end, so that it encounters different conditions of temperature and moisture as it is moved along the tunnel. The other main type is the "compartment" or "chamber" kiln, in which the timber is stationary, but the conditions are periodically changed. By the use of such kilns, and with the aid of wet-bulb and dry-bulb thermometers and humidity charts, it is possible to discover and standardise methods of rapid seasoning that sufficiently conserve the desired properties of the timber treated, and also to vary the methods in accordance with the use to which the wood will finally be put. Mr. Tiemann gives a general account of various kilns belonging to these main types, but devotes most of his attention to the water-spray kiln with which his own name is associated.

Mr. Tiemann's book is a happy combination of the technico-scientific with the practical. For instance, in dealing with the most economic method of supplying the minimum amount of heat, a scientific discussion of the quantity of heat required is accompanied by practical information as to the methods to be adopted of obtaining, distributing, and conserving the heat required. Accordingly, instructions are given as to the architecture of the kiln, the laying out of several kilns in juxtaposition, the use of exhaust and "live" and superheated steam, the distribution and dimensions of the heating pipes, the aerating devices, and the nature, structure, and thickness of doors, walls, and roof.

In conclusion, this work may be recommended not only as the sole authoritative book of its kind, but also as summarising the author's extensive original scientific and practical investigations on the subject.

P. G.

TWO CATALOGUES OF SCIENTIFIC PUBLICATIONS.

(1) *University of Chicago. Publications of the Members of the University.* 1902–1916. Pp. x+518. (Chicago: University of Chicago Press; London: Cambridge Univ. Press, n.d.)

(2) *The "Athenaeum" Subject Index to Periodicals,* 1916. *Science and Technology, including Hygiene and Sport.* Pp. 162. (London: The *Athenaeum*, 1918.) Price 10*s*. net.

DURING the last twenty years there has been an extraordinary increase in the annual output of books and papers on scientific subjects. In the olden time many a quiet student would be content to spend his life upon one piece of work, producing at last one *opus magnum* in the hope that it might remain a permanent addition to human knowledge.

Now that schools, colleges, and universities have spread a knowledge of science abroad among the people, our men of science are no longer allowed to confine their publications to a record of their own researches, but are called upon to write text-books, articles in popular magazines, reviews, lectures, and addresses given at institutions, congresses, and receptions.

Knowing that all this scientific literature exists, anyone wishing to learn the present state of our knowledge on any given subject or of the theoretical views generally held upon it might well despair of ever discovering all that has recently been written on these subjects, if he could not rely upon the labours of bibliographers and compilers of indexes and catalogues to aid him in his search.

(1) A complete catalogue of all scientific publications throughout the world would be, unfortunately, very bulky. Some idea of its size may be gathered from an examination of the Catalogue of "Publications of the Members of the University, 1902–1916, published by the University of Chicago, compiled on the twenty-fifth anniversary of the foundation of the University." This catalogue is very inclusive, giving the titles of all books, articles, reviews, and theses published by members of the Chicago University during these fourteen years. The catalogue runs to 500 pages, and is remarkable as showing how prolific in published work a single university may be.

It is scarcely possible or even desirable to index the world's scientific literature on this scale, so that in any comprehensive catalogue some means must be found by which papers of minor importance may be eliminated.

No doubt a counsel of perfection would be that competent critics should read everything that is published and decide in regard to each book, pamphlet, or article whether it brought to light any new facts or fresh theories. Upon this decision the inclusion of the book or paper among those to be indexed would depend.

This is the method attempted by the International Catalogue of Scientific Literature. It must be confessed that the result depends very largely upon the judgment of the experts engaged upon the work.

(2) An alternative method is to draw up a list of journals of acknowledged character and to confine the catalogue to papers published in these journals. When this plan is adopted it is hoped that authors, finding that certain periodicals are always indexed by bibliographers, will gradually acquire the habit of sending any original paper they wish to publish to one of these periodicals. For the success of this plan it is necessary to publish a list of the periodicals indexed. Unfortunately, in the *Athenaeum* subject index of periodicals the high cost of composition and paper

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has compelled the publishers to omit, for the present, the list of periodicals cited. In the section "Science and Technology, including Hygiene and Sport," published in April as part of the *Athenaeum* subject index for 1916, we are told that 311 periodicals are cited. The editors state that more than 500 periodicals have been indexed in their class lists for 1915–16.

The section "Science and Technology" of the "*Athenaeum* Subject Index to Periodicals" should have a wide circulation at the present time, when a knowledge of the best and most economical methods of carrying out a great variety of technical processes is of such importance to the country. The Council of the Library Association is to be congratulated on having brought this index into existence, and it is to be hoped that it will receive such support as will enable the work to be continued.

OUR BOOKSHELF.

Essentials of Practical Geography. By B. C. Wallis. Pp. xv+213. (London: Macmillan and Co., Ltd., 1918.) Price 4*s*. 6*d*. net.

This volume, which contains a great deal of original research work, is a valuable contribution to the practical side of the science of geography. It furnishes the teacher of the subject with a representative collection of practical exercises on the essential principles usually included in a four years' course of geography in an average secondary school. The 104 pages of part i. contain what may be regarded as a minimum course of practical geography. Part ii. (50 pages) is devoted to supplementary exercises which may be worked in the geography lessons or in the periods assigned to arithmetic, mathematics, physics, handwork, and drawing. The remainder of the book deals with outdoor work and advanced map-reading, revision exercises, etc. The work is skilfully planned, there being varied exercises for the beginner as well as for the advanced student. The principle of contour lines leads to isotherms, isobars, isohyets, etc. The diagrams showing isopleths for Java and Kew are particularly instructive.

The treatment of raininess is very full, several of the author's sets of monthly raininess maps being reproduced from the *Scottish Geographical Magazine* and from the *Monthly Weather Review* of the United States Weather Bureau. The example on p. 142 shows clearly the method of obtaining the "raininess numbers"; but since the actual monthly rainfall of Algiers for each month is given correct only *to the nearest inch,* it seems scarcely logical to calculate the theoretically evenly distributed rainfall in inches to two decimal places and to infer from the numbers so obtained that February is the rainiest of four months, each of which is credited with 4 in. of rain. If the figures for the monthly rainfall of Bombay had been given to a closer degree of accuracy, the corresponding raininess numbers given on p. 143 could have been made to agree with those assigned to Bombay on p. 43. On p. 143 (sixth line from the bottom) the word "quarter" should be "third."

At the end of the book is a useful glossary, a collection of examples of subjects for debates, and a set of indexes. W. M. C.

Practical Organic and Bio-chemistry. By R. H. A. Plimmer. New and revised edition. Pp. x+636. (London: Longmans, Green, and Co., 1918.) Price 18*s*. net.

The speedy appearance of a new edition of this work indicates that it has established itself as a trustworthy and useful aid to practical bio-chemistry. The chief characteristics of the previous edition, to which attention was directed in Nature of January 13, 1916 (vol. xcvi., p. 532), remain quite unaltered, and only slight changes in detail have been introduced. These are comparatively few in number, and take the form of modifications of methods of analysis and preparation rendered necessary by new publications. Thus the new methods of preparation of the bile acids, due to Schryver and to Mair, and the latest method of estimating glucose in blood (MacLean), are fully given. A new plate of absorption spectra forms the frontispiece, and includes the spectra of chlorophyll and other leaf pigments, as well as those of the colouring matters of the blood and urine. Appropriately for the times the remarks on diet have been recast, but the few lines devoted to "vitamines" scarcely do justice to the present state of our information with regard to those important dietary constituents.

A welcome addition to the new edition would have been some account of the methods employed in the estimation of the products of bacterial fermentation, a branch of bio-chemistry which has recently become of considerable importance, both from the scientific and the technical point of view. In particular a description of the processes proposed for the determination of mixtures of the lower fatty acids would have been of great value to many workers, although the problem has not yet been satisfactorily solved. A. Harden.

Yorkshire Type Ammonites. Edited by S. S. Buckman. The original descriptions reprinted, and illustrated by figures of the types reproduced from photographs mainly by J. W. Tutcher. Parts ix. to xv. (London: W. Wesley and Son, 1913–18.) Price 3*s*. 6*d*. net each.

All students of ammonites will welcome this latest addition to Mr. Buckman's work. It contains nearly fifty excellently reproduced figures of as many different species, accompanied by the original as well as detailed modern descriptions. The whole provides as good a substitute for the actual specimens as can be desired.

Seventeen new genera are instituted, the fate of which may be left to the future. It is unfortunate that no guiding principle has been followed consistently in devising new names. In accordance with common practice the majority end in "iceras"

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